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Stress management intervention could reduce the adolescent smoking behavior

Riyanto

Politeknik Kesehatan Kemenkes Bandung

Corresponding author email: riyantooo39@gmail.com

Ni Putu Ariani

Program Studi Keperawatan Bogor

Ida Farida

Program Studi Keperawatan Bogor

Ati Nuraeni

Program Studi Keperawatan Bogor

Amid Salmid

Program Studi Keperawatan Bogor

Abstract---Smoking in adolescents has become a habit and the proportion tends to increase. The cause of teenagers smoking psychologically was for relaxation, giving calm and coping with stress. The purpose of this study was to examine the influence of stress management on adolescent smoking behavior in West Bogor District Vocational High School (SMK). The results of this study are expected to be useful for the preparation and implementation of intervention programs and as a guide for nurses in providing stress management interventions. The research design was Quasi Experimental using pre and post tests with Control Group. Before the selection of respondents, screening was conducted on 5 SMKs totaling 410 students. From the results of the screening, it was found that the number of adolescents who smoked less than or equal to 5 cigarettes per day with mild and moderate stress levels was 108 students. This group was divided into two, namely the control group 54 students and the intervention group 54 students. The results showed that the average number of cigarettes smoked per day in the intervention group decreased from 3.30 to 1.42 cigarettes. There was a significant decrease in smoking behavior in adolescents after getting stress management interventions (P value 0,000). Whereas in the control group there was no decrease in the number of cigarettes smoked per day, even increasing from 2.94 cigarettes to 3.40 cigarettes (P value

0.093). There are significant differences between the behavior of adolescents who have received stress management interventions with the control group (post test) with P value 0,000. Discussion: Stress management is recommended to be introduced to reduce adolescent smoking behavior.

Keywords---stress management, adolescent, smoking behavior.

Introduction

Smoking behavior has become a habit of society including adolescents. Smoking behavior in adolescents is caused by some factors within him or herself and environmental factors. Initially teenagers wanted to try smoking cigarettes because of friends' offers, or smoking because they experienced stress, and stated the effects of cigarettes that can relax and be comfortable so that they can reduce stress. The ease in getting cigarettes and the influence of cigarette advertisement is an enabling factor for teenagers to smoke (Aditya, 2014). The stress that is often experienced in adolescence is related to some problems, namely: self-confidence, and changes in body structure, relating to school, poor self-adjustment, relationships with peers and career (Perry and Potter 2009; Pender 2005). The development that is so fast and complex can cause so much pressure on teenagers. Hanida and Kemala (2005) suggested that under stress or stress conditions allows a teenager to smoke. Similarly, it was stated by Hilyana, Suryanti, and Muzakir (2013) that, there is a significant relationship between adolescent stress levels and adolescent smoking behavior.

The Global Youth Tobacco Data Survey showed that in 2006 active smokers in Indonesian's teenagers were 12.6%, while in 2009 the number of smokers increased to 20.3%. The results of Riskesdas (2013) showed that the highest proportion of sometimes smokers was at the age of 15-19 years (teenagers) as much as 7.1% and every day smoking was reaching 11.2%. The average number of cigarettes smoked per day per person in Indonesia in 2013 was 12.3 cigarettes (equivalent to one pack) and in West Java was 10.7 cigarettes. According to Ariani (2009), teenagers who smoked in West Bogor were 36.9%. Other studies conducted by Ariani and Nuraeni (2012) on adolescents in West Bogor Sub-district revealed that there was a 33% sensation of teenagers' desire to smoke because of experiencing stress. The average number of cigarettes smoked in one day was 4.82 cigarettes.

Cigarettes have a lot of negative effects, because cigarettes contain 4000 chemicals such as nicotine, tar and so on, with 200 types of which are carcinogenic which can cause cancer. The toxins produced contain carbon monoxide, benzodiazopyrene, and ammonia. Susenas (2011) in IDAI (2012) reported that substances contained in cigarettes can cause several lung diseases (70% in men) and 56-86% cause chronic respiratory tract diseases (chronic bronchitis and pneumonia), 22% of cardiovascular diseases, and 56% impotence in men. While the impact of smoking on female smokers can interfere with their reproductive health. According to Boyke in Imam W (2010), cervical cells poisoned by nicotine contained in the blood also have a tendency to affect the mucous

membranes of the cervix making it susceptible to cancer cells, due to changes in cervical epithelial cells and causing cancer cervix. The risk of women smokers developing cervical cancer 4-13 times greater than women who do not smoke.

To reduce cigarette consumption and the adverse effects of smoking behavior, it is necessary to have intensive and affective treatment. Preventive and curative efforts do not only use a cognitive approach to the dangers of smoking, but more to the emotional approach and affective touch. In the later stages smoking in adolescents is a coping mechanism of self-defense or comfort blanket from stress (Mc Donald, 2005; Giarelli's (2006) study showed that smoking cessation can also reduce lung cancer risk within 5 years, and also reduce the risk of other cancers such as head, neck, pancreas, esophagus and sexual dysfunction. Even after a cancer diagnosis, smoking cessation can increase life expectancy and reduce the risk of developing cancer.

By paying attention to the above phenomenon, one of the efforts to overcome the above problems is to provide interventions for stress management through peer education in group, namely through a stress management intervention approach. Stress management is a way to prevent and overcome stress so as not to get to the most severe stage. Effective stress management can maintain a sense of self-control so that some problems will be accepted as challenges, and not threats. Stress is associated with decreased life satisfaction, mental development disorders and is a source of various diseases in humans such as cardiovascular disorders, back pain, headaches and decreased immunological function to cancer. If stress is not quickly addressed or managed properly, it will be able to have further impacts such as easy disruption or disease and easily lead to drug and cigarette use behavior. Therefore this study was aimed to get an overview of the influence of stress management on smoking behavior in adolescents in West Bogor.

Research Methods

The research design used was the Quasi experiment using pre-post test with control group design which was carried out in two stages. The first stage was screening about smoking behavior and stress levels both in the intervention group and in the control group. Screening stress levels use a standard questionnaire from Kurzen (2000). Kurzen divides the stress level into 4 categories not stress, mild stress, moderate stress and severe stress. The second phase carried out a stress management intervention program using a stress management model developed by Pender (2005). The stress management intervention program was given as many as 5 sessions, once a week for 5 weeks. Intervention activities by providing information about: session 1) basic concepts of stress in adolescents, session 2) body response to stress and its effects on body systems, smoking and harm to the body, the effects of stress on cigarettes, sessions 3) environmental modification, time management, sleep needs in adolescents, and body weight control, sessions 4) exercise in adolescents, and adaptive coping, session 5) progressive relaxation techniques, relaxation imagery, and self relaxation.

The population in this study were adolescents in the West BogorSub-district of Bogor City, who had a history of early smoking (stage of becoming), with maximum of 5 cigarettes per day, aged 14-21 years, and willing to become

respondents. The sampling strategy was a simple random sampling. The selection of intervention and control groups was obtained by random method by drawing 5 Vocational Schools in West Bogor. Lottery results obtained by 3 Vocational Schools were made into intervention groups and 2 Vocational Schools were made into control groups. After that, each group was formed 1-2 groups so that overall they were become 5 intervention groups and 5 control groups. The number of participants in one group amounted to 12-13 people. Thus, 54 persons of intervention group and 54 persons of control groups were obtained.

The instrument used in the data collection about smoking behavior, in the form of a standard questionnaire from Riskesdas (Ministry of Health, 2013). This research was conducted in Bogor Barat Subdistrict, Bogor City. The collected data was then analyzed using Wilcoxon Test, Mann Mathney Test, and Ancova Test (Covarian Analysis).

Results and Discussion

Results

Characteristics of respondents in this study were: adolescents aged 14-17 years with 1-5 cigarettes. Most types of cigarettes smoked by teenagers were white cigarettes (74.1% in the intervention group, and 85.2% in the control group). Smoking duration of adolescents smoked 1-5 years (96.3% in the intervention group and 47% in the control group). For activeness in the school more were inactive, ie 56.6% in the intervention group and 59.3% in the control group). Stress in the intervention group was more in mild stress conditions (87.0) and in the control group (90.7%).

Homogeneity test

For the number of cigarettes smoked, and the duration of smoking in the intervention and control group, the Mann Witney Test was used. The results can be seen in table 1 below.

Table 1.

Analysis of the equality of the number of cigarettes smoked and length of smoking in the intervention group and control group (Pre Test) in West Bogor Sub-district Vocational High Schools. N = 108

No	Variables	N	Mean Rank	P. Value
1.	Average number of cigarette Intervention group	54	58,47	0,177
	Control Group	54	50,53	
2.	Smoking duration Intervention group	54	50,54	0,174
	Control group	54	58,46	

From the results of the Mean Rank analysis, the intervention group smoking was 58.47 and the control group was 50.53. There was no significant difference in the average number of cigarettes smoked in the pre-test before intervention in the intervention group and the control group (p value = 0, 177). Likewise, the duration of smoking in the intervention group Mean Rank was 50.54 and control was 58.46. There was no significant difference in the intervention and control groups with p Value of 0.174. Thus for the number of cigarettes and smoking duration in the intervention group and control group was homogeneous. Other tests were equality tests for: types of cigarettes, activeness and stress levels in the intervention group and control group. The results are as presented in table 2 below.

Table 2.
Analysis of equality of types of cigarettes, activeness in schools, and stress levels of adolescents in West Bogor Sub-district Vocational Schools. N = 108

No	Variables	Interventn group N=54		Control group N=54		Total		P value
		N	%	N	%	N	%	
1	Cigarette							0,232
	Types	40	74,1	46	85,2	86	100	
	White cigarette	14	25,9	8	14,8	22	100	
	Kretek cigarette							
2	Activeness							0,846
	Not active	30	56,6	32	59,3	62	100	
	Active	24	44,4	22	40,7	46	100	
3	Stress level							0,759
	Mild stress	47	87	49	90,7	96	100	
	Moderate stress	7	13	5	9,3	12	100	

The results of the analysis from Table 2, regarding equality of types of cigarettes, activeness, and stress levels showed that there were no significant differences in the types of cigarettes in the intervention and control groups (P value 0.232). For the analysis of equality of activeness in organizations in schools also showed no significant differences in the level of youth activity in the intervention and control groups (p value 0.846). Likewise for stress levels, there were no significant differences in stress levels in the intervention and control groups (p value 0.759). The results of the dependent test analysis using the Wilcoxon Signed Rank Test about the number of cigarettes smoked in a day before and after being given stress management interventions are as presented in Table 3.

Table 3.
Average number of cigarette smoked by Teenagers in the Intervention Group and Control Group (Pre and Post Test) in Vocational Schools in West Bogor District, N=108

No	Variables	N	Mean	SD	Difference	P.Value
1	Number of cigarette/day					
	Intervention group	54	3,30	1,172	1,88	0,00
	Pre Test	54	1,42	0,950		
	PostTest					
2	Number of cigarette/day					
	Control group	54	2,94	1,265	0,41	0,093
	Pre Test	54	3,41	1,654		
	PostTest					

Table 3 shows a decrease in the number of cigarettes smoked in one day from an average of 3.30 decreased to 1.42 cigarettes, with a difference of 1.88. Thus it can be concluded that stress management interventions significantly reduce adolescent smoking behavior with p-value of 0,000. The same test for the control group showed an increase in the number of cigarettes from 2.94 to 3.41 cigarettes per day. There was no significant difference in the number of cigarettes smoked per day before and after in the control group (P value 0.093). The results of bivariate analysis in the Intervention and control groups group Post test (Independent), using the Mann-Whitney Test are presented in Table 4

Table 4.
Average number of cigarettes smoked by Teenagers in Intervention and Control Groups (Post Test) in Vocational Schools in West Bogor Sub-district, N = 108

No	Variables	N	Mean	Mean Rank	P.Value
1	Number of cigarettes/day				
	Intervention group	54	1,42	35,81	
2.	Control group	54	3,41	73,19	0,00

The results of the above test analysis showed that on average, the number of cigarettes smoked by teenagers in a day in the post intervention group was 1.42 cigarettes. Whereas in the control group it was 3.41 cigarettes. Mean Rank in the intervention group was 35.81, while in the control group the Mean Rank was 73.19. Thus it can be concluded that there was a very significant difference in the number of cigarettes smoked in a day by adolescents in the intervention group compared to the control group who did not get stress management, with the P-value of 0.00.

Discussion

In this study there was a very significant decrease in adolescent smoking behavior. The decrease occurred in the number of cigarettes smoked one day before getting stress management compared to after getting a stress management intervention. Whereas in the control group there was no decrease in smoking behavior, but on the contrary there was a binding of the number of cigarettes smoked in one day without getting intervention. Giving stress management has a significant effect in reducing the number of cigarettes smoked in one day. Stress management is an intervention given to adolescents to improve the ability of adolescents to manage stress well so that if teenagers experience pressure do not use maladaptive coping by smoking. Stress in adolescents if not well anticipated, then adolescents will begin to depend on cigarettes, the number of cigarettes will increase and smoking to get pleasure and cigarettes are used as coping with self defense mechanisms or comfort blankets from stress.

Elisabeth (2010) shows that the causes of smoking are one of them is to get calm, relax and reduce tension or stress. Using adaptive coping mechanisms is needed in an effort to reduce the number of cigarettes in adolescents. Stress management programs, especially the use of adaptive coping are very necessary for adolescent boys because in dealing with emotional problems men tend to use less effective coping such as denial, distraction, alcohol use, and smoking. In addition, adolescent boys do not use social networks as interpersonal supporters but only as free time. In stress management interventions when adolescents experience problems or stress adolescents are trained to use adaptive coping such as *problem solving*, using support (*social support*) from friends, teachers and family, and increasing the ability of adolescents to think positively. Thus adaptive coping can reduce the behavior of smoking youth.

Other activities in stress management in adolescents who smoke by doing relaxation techniques. Relaxation techniques on stress management are trained to overcome tension by progressive relaxation, relaxation *imagery* and screening of videos *self-relaxation*. Vargogli and Darwn (2011) suggest from the results of a review of many literature studies that stress management techniques areas a *evidentbasis for* procedures to reduce stress and improve health status. *Relaxation Imagery* is a relaxation technique that can reduce adolescent smoking behavior.

Stress management interventions in adolescents can reduce the number of cigarettes smoked in a day and changes in behavior to stop smoking Teenagers who stop smoking are mostly done by adolescents whose number of cigarettes ranges from only 1-2 cigarettes a day. This means that early prevention before becoming a cigarette addict is a very strategic action. The provision of stress management interventions is considered very effective for adolescents in the early phase of smoking before smoking becomes an addiction. Thus the smoking behavior prevention program should be done early, since adolescents begin to recognize smoking at the age of 13-15 to prevent an increase in the incidence of smoking in adolescents.

Stress management is also effective in decreasing the number of cigarettes smoked at smoking < 3 years of. When viewed from the stages of smoking addiction, Scheibmeir and O'Connell (2002 in Mc Donald, 2005) suggest that smoking adolescent addiction behavior is divided into three where in the first phase when smoking until 15 years old smoking only wants to show freedom, imitate friends, stars films without knowing the consequences of smoking. Teenagers who have known cigarettes will begin to join people who smoke and tend to have additional doses (Dep Kes & WHO, 2005). In order for adolescents not to fall in the addiction stage, the provision of stress management in reducing adolescent smoking behavior, especially in adolescents who smoke < than 3 years.

According to Laventhal & Cleavy in Elisabeth (2010), the second stage or initiation or the stage of smoking pioneering, where at this stage the provision of stress management is needed because at this stage someone is making a decision to stop or continue smoking. Stress management is effective in reducing smoking behavior in the second stage, as well as in the third stage with fewer than 5 cigarettes.

The types of cigarettes in this study were mostly teenagers using white cigarettes and a small proportion used clove cigarettes. The results of the research on the application of effective stress management also on the behavior of adolescents who use white cigarettes and clove cigarettes. This is because the content of white cigarettes and clove cigarettes is not much different. The difference in clove cigarettes is clove content, and clove cigarettes did not use filters but now clove cigarettes are accompanied by filters (Azmi Cole, 2010).

In this study in the intervention group although there was a decrease in the number of cigarettes still found not to stop smoking. The number of cigarettes smoked partially on average 2 sticks. This research was supported by Elisabeth, Victoria, Martha, Piece (2009), a survey conducted in California on a national basis that showed only 24% stopped smoking, 45% smoking behavior decreased or decreased, and 68% thought to quit smoking. This condition is in accordance with WHO findings which reveal that 70-80% of smokers want to stop smoking, one third have tried as hard as they can, only 1/3 of them have succeeded (Beistein, Boudreux, and Cydulca, 2006).

From the results of discussions with teenagers in fact teenagers have thought about quitting smoking but they are very difficult to reject peer invitations, especially when in society. Teenagers say that in the morning they are still able to control themselves not to smoke. This phenomenon shows that the role of peer groups is very large in shaping smoking behavior in adolescents. Peer groups can have a positive influence, but peer groups can introduce adolescents to unhealthy behaviors such as smoking (Desmita, 2005; Koziar et al., 2004).

The results of the study by Ceo and Huang (2012), showed that peers were the main cause of adolescent smoking behavior. Studies that examine the social networks of adolescents on smoking behavior are identified through searching online and manual literature. Ten social networking analysis studies involved 28,263 adolescents in the final review. Eight of the studies reviewed showed that

peer choice in adolescents who first smoked and affected smoking behavior and the intention to smoke. By paying attention to this issue, an training program *assertive training* for adolescents needs to be given. Assertive exercise is a social skills exercise that is given to individuals who are unable to defend their rights, are too weak and allow others to undermine themselves, and are unable to maintain their right not to smoke or stop smoking.

Adolescents also say the difficulty of quitting smoking is also due to family influence. There is a significant relationship between parents who smoke and the behavior of adolescent smoking. Virginia (2003) study on 297 respondents aged 14-18 years in Yameni United States showed a significant relationship between parents smoking and the behavior of adolescent smoking. Ariani (2006) research in SMA and SMK West Bogor District showed that authoritarian and permissive parenting was at risk for adolescents to smoke. Authoritarian parenting is twice the risk of smoking in adolescents compared to democratic parenting. Likewise permissive parenting is more at risk than authoritarian and democratic parenting. Based on these results, the role of the parent organization is very large in influencing adolescent smoking behavior.

When viewed from the control group there is an increase in the number of cigarettes smoked every day. The more often hanging out with peers who smoke will increase or increase the dose (tolerance) to become addiction. This means that without intervention there is an increasing tendency for smoking among adolescents. Stress management programs in schools need to be implemented, strategic place schools, part time adolescents in schools and very effective in developing smoking behavior prevention programs (Nies and Ewen, 2007; Murnaghan, Sihnoven and Leather 2007).

Stress management interventions can be applied in schools through the School Health Business (UKS) program. The government has issued regulations that prevent the possibility of adolescents in schools, the Minister of Education and Kebudayaanno 4 / U / 1977 Instruction concerning the smoke-free school environment. Regional regulation No. 17 of 2004 is a non-smoking area and a ban on smoking in public places including in schools. The application of rules in schools can reduce the percentage of smoking behavior of beginners but have not been able to reduce the number of cigarettes. For this reason, besides applying the smoking ban in public places, it is also necessary to provide stress management in schools and communities in reducing adolescent smoking behavior.

Conclusion

Characteristics of the respondents in this study were all men, ranging in age from 13-17 years. Youth activeness in school activities, more than half of adolescents are inactive. As for stress levels, more than half of adolescents experience mild stress. Stress management interventions can reduce the number of teen smoked cigarettes in one day in the group that gets stress management interventions. While those who did not get a stress management intervention did not experience a decrease, but instead there was an increase in the number of cigarettes smoked in one day.

Suggestions

Stress management programs need to be developed in schools, families and communities in the form of community service activities and research. The stress management program implemented in schools can be integrated with the Guidance and Counseling subjects and other subjects, especially schools in collaboration with Puskesmas to form a UKS implementation team and apply stress management interventions to reduce adolescent smoking behavior. The Puskesmas program in the form of counseling that only provides a cognitive touch, needs to be enhanced by an affective touch in the form of a stress management intervention program in adolescents who smoke in schools, and in the community.

For the development of research, it is necessary to further develop the effect of interventions *assertive training* in preventing adolescent smoking behavior. The research target is not only in vocational schools, but can be done in high school and junior high school. Other research that needs to be developed is the intervention of the importance of parenting, group therapy to parents to improve family abilities in early detection and prevent smoking behavior of adolescents. Another study that also needs to be developed is the effectiveness of implementing several interventions in addressing the problem of adolescent smoking behavior.

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